Rewrite claim 10 as follows:

10. (Amended) The method of claim 1, wherein

the step of receiving includes receiving the graphics data at a rate greater than 100 MHz; and

the steps of calculating and providing are performed in real time with respect to the step of receiving.

REMARKS

The Applicant traverses the rejection and requests reconsideration.

Claims of the patent application have been amended to more clearly articulate the subject matter that the Applicant contends is new and non-obvious. Among other things set forth below, the Applicant wishes to draw the Examiner's attention to the claim limitation requiring the processing of digital graphics *data*.

Claims 1-6, 8-9, 11-17, 19-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,323,828 to Perez, in view of IBM Technical Disclosure Bulletin, TDB-ACC-NO:NB8910257. In particular, the Examiner cited column 3, lines 40-43 of Perez as ostensibly satisfying the first limitation of claim 1, i.e. providing digital graphics data of a predetermined type having an expected characteristic to a graphics output port of a graphics system and referred to the structure identified by reference numeral 100 as ostensibly performing the claim 1 step of receiving a representation of the graphics data from the graphics output port.

The Examiner cited column 4, lines 26-28 of Perez as ostensibly showing the third limitation of claim 1, which is calculating a characteristic based upon the representation of the graphics *data*. The Examiner cited column 5, lines 20-23 of Perez as ostensibly satisfying the last limitation of claim 1 which is providing the calculated characteristic to a serial interface of the graphics system.

The Examiner admitted that Perez does not explicitly teach the testing of digital graphics data. It appears that the Examiner therefore relied upon the IBM Technical Disclosure Bulletin as showing an automated video test card that allows testing of digital *and* analog video signals. It appears that the Examiner concluded that it would have been obvious to one of skill in the art to modify Perez to provide a system that allows testing of digital and analog graphics data.

The Applicant respectfully disagrees with the Examiner's reading of the '828 patent and the IBM Technical Disclosure Bulletin. Merely citing a reference that discloses graphics data in

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combination with the '828 patent does not show any of the pending claims. Among other things, the Examiner's reliance upon column 3, lines 40-43 and column 3, line 44 of the '818 patent as ostensibly teaching the first two limitations of claim 1 is misplaced.

First, the '828 patent does not teach the step of "providing graphics data...to a graphics output port of a graphics system." Column 3, lines 40-43 of the '818 patent (cited by the Examiner) teaches that the test software performs five main functions. Those functions include generation of video signals to be tested including the configuration of a conventional display.

The recitation of "data" in the claims is significant in that anyone of ordinary skill in the art knows that data is not an analog signal voltage level and that the measurement of signal level is not the same as a calculation using data.

Merriam Webster's Collegiate Dictionary, Tenth Edition, copyright 1997 provides at least three definitions for the word "data." According to the third definition, which is consistent in the context in which the word is used in the pending claims, "data" means "information in numerical form that can be digitally transmitted or processed."

Paraphrased, the pending claims require (or perform) the testing of data. The '828 patent teaches the *measurement* or testing of *analog signals, i.e., VGA output signals.* Col. 4, lines 12 – 14 the '828 patent clearly states "As is well known, the VGA output comprises five signals: three *analog* color signals (red, green, blue) and two synchronization signals." (Emphasis added.) Anyone of ordinary skill in the art would recognize that testing analog VGA *output signals* as taught by the '818 patent *cannot* be read to encompass or teach any of the claim limitations, but in particular, the providing and/or receiving of "data." The Examiner's reliance upon the '828 patent as even relating to the provision or reception or testing of *data* is misplaced.

The Examiner's reliance upon the '828 patent as showing the third step of claim 1, i.e., "*calculating* a...characteristic *based upon...data*" is also misplaced. Column 4, lines 26-68 of the '828 patent teaches that *measurements* are performed by the test unit on analog signals that originate from the unit under test. Merriam Webster's defines "calculate" to mean "to determine by mathematical processes."

Anyone of ordinary skill in the art would appreciate that a "measurement" of an analog signal (as taught in the '818 patent) using a voltmeter for instance, is not the same as the claimed "calculation" of data by a processor. As is clear from the text of column 4, lines 26-68, there is *no* calculation of data performed or taught in the '828 patent; voltage levels are *measured* to determine their compliance with the VGA standard.

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The Applicant submits that it is not reasonably possible to read the claim limitations so broadly that they read on the disclosure of the '828 patent. Providing or receiving *data* as claimed in the pending claims is not the same as sending or receiving analog signals as taught by the '828 patent. Calculating *data* is not the same as measuring analog signal voltage levels.

The IBM Technical Disclosure Bulletin specifically states that is describes a method of testing digital and analog video signals using *signature analysis*. It is well known that signature analysis is not a calculation per se, nor does signature analysis contemplate a determinable result by way of calculation.

As stated in the IBM Technical Disclosure Bulletin, signature analysis is a test technique whereby a long, serial bit stream is compressed into a relatively small number of digits using a shift register, the input of which is logically combined with one or more other bit positions. As such, signature analysis is not a calculation nor does it provide for calculation of an expected result. The Examiner's reliance upon the IBM Technical Disclosure Bulletin as ostensibly teaching a modification of the '828 patent to provide the claim limitations is incorrect.

The Applicant submits that by combining the '828 patent with the IBM Technical Disclosure Bulletin, one of ordinary skill in the art would be led to use signature analysis to test analog signals of a VGA output, which would be a physical impossibility. Alternatively, one of ordinary skill in the art might be led to convert the VGA analog signals to digital form, then employ signature analysis techniques. Unfortunately, as is well-known, an analog to digital conversion of VGA-compliant signals would not yield consistent data because of voltage variations permitted in a VGA-compliant signal. Even converting analog VGA signals to a digital format would not yield consistent data because of permissible variations in VGA output levels and even obtaining a consistent signature would be impossible to achieve.

In contrast, the Applicant's method recites the provision of digital data, its calculation into an expected result and a return of the expected result back to the originating system to determine whether or not the graphics circuit is operating correctly: there is no ambiguity. No reference or combination of references cited by the Examiner shows or suggests the limitations of claim 1.

The Applicant respectfully requests reconsideration of claim 1, or an explanation of how the Examiner construes the '828 patent to Perez and the IBM Technical Bulletin to teach the provision of digital graphics data, receiving the digital graphics data, and calculating an expected result.

As for claim 2, it expressly recites that the expected characteristic recited in claim 1 is a calculated value. Perez, column 3, lines 40-43 cannot be read to teach that an expected

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characteristic is a calculated value. Perez expressly states that it teaches the testing of VGA signals which Perez teaches are known to be analog signals from which no calculation value can be obtained.

As for claim 3, Perez does teach the evaluation or measurement of red, green and blue analog signals but does not teach the limitation of claim 3 which claims that the predetermined type of digital data of claim 2 represents different color components.

As for claim 4, it claims that the predetermined type of digital graphics data of claim 2 includes a horizontal synchronization component. As set forth above, claim 2 recites that the expected characteristic is calculated. Perez teaches that the analog VGA signals are measured. Anyone of ordinary skill in the art knows that measuring and calculating are two distinctly different operations.

Claim 5 adds the limitation that the data type includes one of red, green and blue color components.

Claim 6 adds the limitation that the digital data includes the vertical synchronization signal, which is an analog signal in the VGA standard.

Claim 7 adds the limitation that the expected calculated data value is a CRC value, which is distinctly different from a measured voltage, the value of which can change yet be within the VGA standard.

Claim 8 adds the limitation that states that the digital graphics data is selectable. In a signature analysis, test data is not selectable. Inputs to the signature analysis shift register come from a unit under test, embodied as whatever data the UUT outputs..

Claim 9 claims that the digital graphics data is received at a real-time graphics rate and the calculation steps are performed in real time. No reference or combination of references discloses "calculation steps being performed, in real time.

Claim 10 adds the limitation that the data reception occurs at more than 100 MHz. There is no such teaching in the references relied upon by the Examiner.

Claim 11 adds the limitation of a particular type of serial interface. There is no such teaching in the references relied upon by the Examiner.

Claim 12 adds a limitation that the graphics output port is for a flat-panel display. There is no such teaching in the references relied upon by the Examiner.

Claim 13 adds a limitation that the serial port is associated with the graphics output port. There is no such teaching in the references relied upon by the Examiner.

Paraphrased, independent method claim 14 claims the steps of receiving digital graphics data at a graphics port; determining, such as by calculating, a characteristic value based on the

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digital graphics data and sending the characteristic data over a serial interface back to the graphics port.

As set forth above, the '828 patent pertains to and teaches *measurements* of VGA output signals, which are well known to be analog signals. Indeed, by their nature, analog signals are readily the subject of a calculation as claimed: they are completely different from digital graphics data. It therefore is impossible to perform the method steps of claim 14 on VGA signals. Accordingly, it cannot be said that the '828 patent shows or suggests providing a calculated characteristic value back to the unit under test 110 or the test controller 130. Accordingly, any combination of the '828 patent or the IBM Technical Disclosure Bulletin does not show or suggest that which is claimed in claim 14.

Paraphrased, claim 15 adds the limitation that the graphics port is part of a digital graphics interconnect port. No reference or combination of references shows such a limitation in combination with the steps of claim 14.

Claim 16 adds the limitation of a Digital Flat Panel interconnect standard for the graphics interconnect of claim 15, which is not shown in the cited prior art.

Claim 17 adds the limitation of determining and providing in real-time, which is not shown in the cited art.

Claim 18 adds the limitation that the data is received at a clock rate of at least 100 MHz., which is also not shown in the cited art.

As for independent claim 19, paraphrased, it claims a device for testing digital graphics data that is comprised of a connector to interface to a digital graphics protocol. A graphics data analyzer module is coupled to the connector and has an output that is connected to a serial bus interface control module.

The Applicant is unable to comprehend how the Examiner reads the '828 patent to show a graphics data analyzer, or any of the other limitations of claim 19. The Applicant respectfully asks the Examiner to cite by column and line number, where the '828 patent even mentions a graphics data analyzer as well as the other limitations of the claim.

The rejection of claim 19 was improper and should be withdrawn.

Claim 20 adds the limitation that the serial data port of claim 19. is coupled to a connector to transmit serial data based on the digital graphics protocol. No reference or combination of references shows or suggests the limitations of claim 20.

Claim 21 adds the limitation that the digital graphics protocol of claim 20 is the Digital Flat Panel standard.

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Claim 22 adds a limitation that there is a power supply terminal that receives power from a PCI bus. Neither of the references cited by the Examiner even suggest the PCI bus.

As for claim 23, the Applicant is unable to understand how the Examiner reads the '828 patent or the I.B.M. reference to find the claimed steps of monitoring a serial *data node*; receiving graphics *data*; determining a test result in response to graphics *data* and sending graphics *data*. As set forth above, analog VGA signals are not *data*.

The Applicant requests the Examiner to cite column and line numbers of the references where the claim limitations can be found. If the limitations cannot be located in the cited art, the rejection should be withdrawn and the claims allowed to issue.
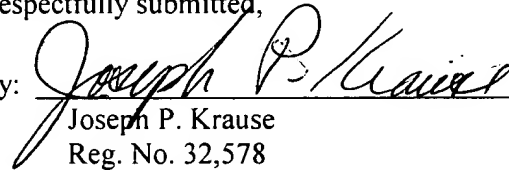
Similarly for claim 24, no reference or combination of references shows or suggests the limitations of claim 24. The Applicant requests the Examiner to cite column and line numbers of the references where the claim limitations can be found.

For the reasons set forth above, the Applicant respectfully submits that all of the claims are allowable over the prior art of record and respectfully requests reconsideration and their allowance.

Respectfully submitted,

Dated: February 19, 2003   By: _____
                                   Joseph P. Krause
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN CLAIMS:

Rewrite claim 1 as follows:

1. (Amended) A method of testing digital graphics data, the method comprising the steps of:

providing digital graphics data of predetermined type having an expected characteristic to a graphics output port of a graphics system;

receiving [a representation of] the digital graphics data from the graphics output port;

calculating a calculated characteristic based upon the [representation of the] digital graphics data; and

providing the calculated characteristic to a serial interface of the graphics system.

Rewrite claim 9 as follows:

9. (Amended) The method of claim 1, wherein

the step of receiving includes receiving the [representation of] graphics data at a real-time graphics rate; and

the steps of calculating and providing are performed in real time with respect to the step of receiving.

Rewrite claim 10 as follows:

10. (Amended) The method of claim 1, wherein

the step of receiving includes receiving the [representation of] graphics data at a rate greater than 100 MHz; and

the steps of calculating and providing are performed in real time with respect to the step of receiving.